Surrey builds AI to find anti-ageing chemical compounds

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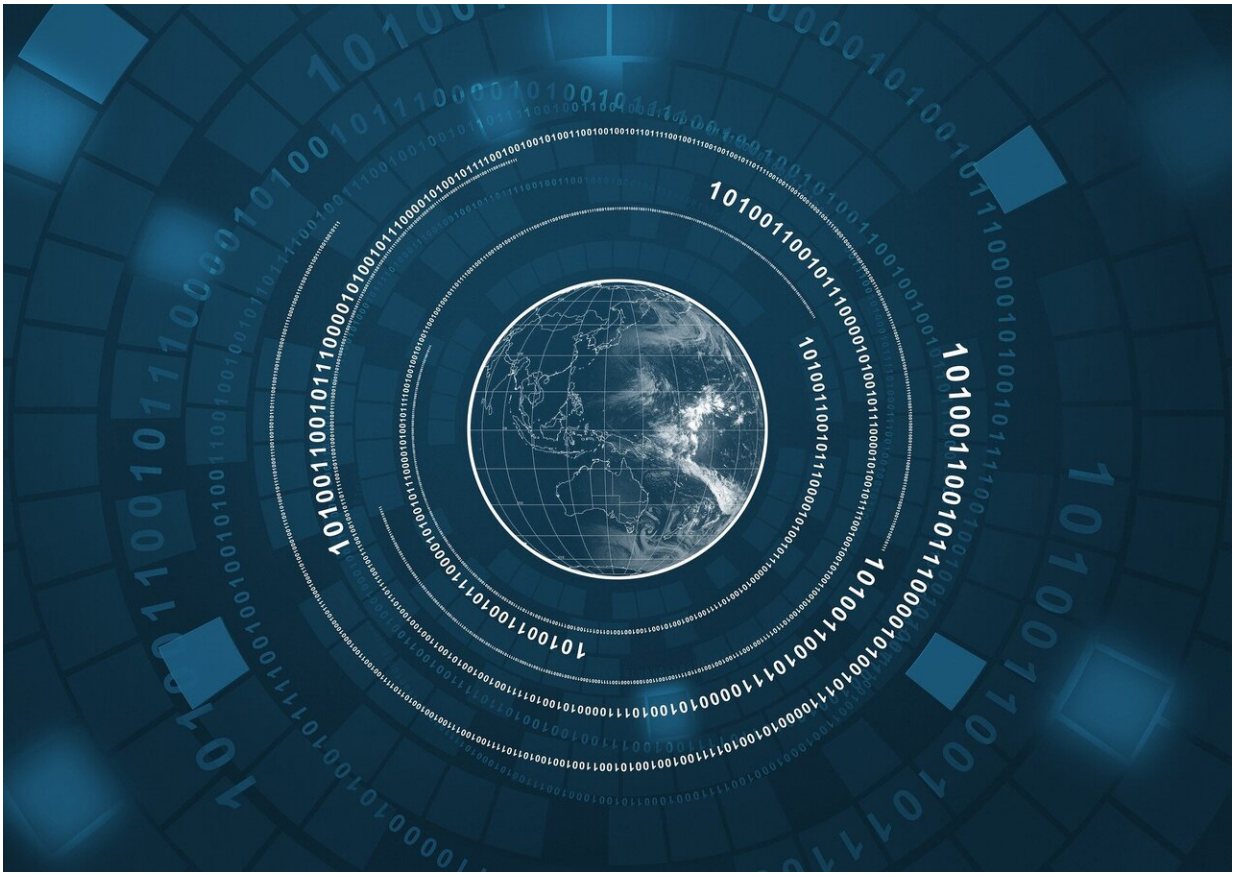

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The University of Surrey has built an artificial intelligence (AI) model that identifies chemical compounds that promote healthy aging—paving

the way towards pharmaceutical innovations that extend a person's lifespan.

In a paper published by *Scientific Reports*, a team of chemists from Surrey built a machine learning model based on the information from the DrugAge database to predict whether a compound can extend the life of Caenorhabditis elegans—a translucent worm that shares a similar metabolism to humans. The worm's shorter lifespan gave the researchers the opportunity to see the impact of the chemical compounds.

The AI singled out three compounds that have an 80 percent chance of increasing the lifespan of elegans:

- flavonoids (anti-oxidant pigments found in plants that promote cardiovascular health),
- fatty acids (such as omega 3), and
- Organooxygens (compounds that contain carbon to oxygen bonds, such as alcohol).

Sofia Kapsiani, co-author of the study and final year undergraduate student at the University of Surrey, said:

"Aging is increasingly being recognized as a set of diseases in modern medicine, and we can apply the tools of the digital world, such as AI, to help slow down or protect against aging and age-related diseases. Our study demonstrates the revolutionary ability of AI to aid the identification of compounds with anti-aging properties."

Dr. Brendan Howlin, lead author of the study and Senior Lecturer in Computational Chemistry at the University of Surrey, said:

"This research shows the power and potential of AI, which is a speciality of the University of Surrey, to drive significant benefits in human

health."

More information: Sofia Kapsiani et al, Random forest classification for predicting lifespan-extending chemical compounds, *Scientific Reports* (2021). DOI: 10.1038/s41598-021-93070-6

Provided by University of Surrey

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